

Turning attention for a moment to FIG. 5 in the drawings, here a slight modification is shown in the angular orientations of the planar support surfaces in the finger clusters. In order to make ready comparison available between FIGS. 5 and 7, the structure shown in FIG. 5 is illustrated as a modification of previously mentioned base support structure 72 holding row 82 of keys in cluster 28. The planar support surfaces for keys 82a, 82b, 82c, 82d are shown at 98, 100, 102, 104, respectively. Surfaces 98, 100 intersect one another at an obtuse angle of about 120-degrees, surfaces 100, 102 at an obtuse angle of about 170-degrees, and surfaces 102, 104 at a reflex angle of about 210-degrees. These angles may be modified to suit particular circumstances. For example, for a user with long fingernails, a more convenient angle between surfaces 98, 100 may range up to about 160-degrees.

FIG. 10 in the drawings illustrates one proposed layout for keys in device 20. Keys in this figure are represented by a mix of circles and rectangles. Other layouts are of course possible.

The apparatus of the invention should thus be seen as one which offers some very distinct use advantages in the keyboard art. The unique architecture of the structure reduces, close to zero, the amount of debilitating hand-, wrist- and finger-motions which plague users of more conventional keyboards. In this respect, a principal contribution of the structure disclosed is that, at least with respect to a user's fingers, only slight gestural key-actuation motion is required, and with respect to the thumbs, only a slightly larger degree of motion is required. Adjustments can be made to suit the keyboard layout to a user's particular hand size. Mounting structures which support the keys which are organized for the fingers can, if more suitable in certain applications, be designed with key support planes which are disposed at angular offsets which are different from those that are described specifically herein.

While a preferred embodiment of the invention has been described herein, it is appreciated that variations and modifications will become apparent to those skilled in the art and may be made without departing from the spirit of the invention.

It is claimed and desired to secure by Letters Patent:

1. An ergonomic keyboard input device for the transmission of information by a human operator to an electronic system coupled with said device, comprising:

a keyboard organized with an array of transmission-actuation keys disposed generally to complement the splayed underside-architecture of a user's hand, said array including

for each finger, a finger-associable cluster of input keys, each key in which is arranged facially to confront, in close proximity and in parallel planar relationship, one of various different, underside, finger-expanse portions of an associated, adjacent finger, thus to enable actuation of a selected one or more of said keys in said cluster via only slight, gestural, relatively closing motion of the confronting corresponding finger-expanse portion, wherein each finger-associable cluster is elongate, and said keys therewithin are distributed along the length of the cluster with respective key-actuation axes that intersect normal to different angularly disposed planes, one plane for each key, which planes intersect one another along the length of the cluster in a mixed pattern of obtuse and reflex angles and

for the thumb, a thumb-associable cluster of input keys disposed generally over three mutually intersecting surfaces to enable key actuation via mixed lateral, and slight endo, translation of an associated adjacent thumb within, generally, a cone of motion whose apex resides adjacent the base of the thumb.

2. The device of claim 1, wherein said clusters extend generally radially from a region of confluence, and said device further comprises a convex, mound-like palm-rest structure located adjacent said region.

3. The device of claim 1, wherein, with regard to said finger-associable clusters, that cluster which is associable with an index finger includes two elongate rows of keys, and the other finger-associable clusters include each a single row of keys.

4. The device of claim 1, wherein, with regard to said finger-associable clusters, each cluster includes at least one elongate row of four keys, and the structure of each said row is substantially such that one key adjacent one end of the row is positioned for actuation by the tip of the ungual tuberosity of the third phalanx of the associated finger, the next adjacent key in the row is positioned for actuation by the base of the ungual tuberosity of the same finger, the next adjacent key is positioned for actuation by the base of the third phalanx of the same finger, and the fourth key adjacent the other end of the row is positioned for actuation by the head of the second phalanx of the same finger.

5. The device of claim 1 which further comprises a base, and wherein at least some of said clusters are mounted on said base for selective, relative positional adjustment.

6. An ergonomic keyboard input device for the transmission of information via human operator to an electronic system coupled with said device, comprising:

a keyboard organized with an array of transmission-actuation keys disposed generally to complement the splayed underside-architecture of a user's hand, said array including

for each finger, a finger-associable cluster of input keys, each key in which is arranged facially to confront, in close proximity and in parallel planar relationship, one of various different, underside, finger-expanse portions of an associated, adjacent finger, thus to enable actuation of a selected one or more of said keys in said cluster via only slight, gestural, relatively closing motion of the confronting corresponding finger-expanse portion, and for the thumb, a thumb-associable cluster of input keys disposed generally over three mutually intersected surfaces to enable key actuation via mixed lateral, and slight endo, translation of an associated adjacent thumb within, generally, a cone of motion whose apex resides adjacent the base of the thumb; and

a base, wherein at least some of said clusters are mounted on said base for selective, relative positional adjustment.

7. The device of claim 1, wherein said mutually intersecting surfaces are generally orthogonal with respect to one another.

8. The device of claim 6, wherein said clusters extend generally radially from a region of confluence, and said device further comprises a convex, mound-like palm-rest structure located adjacent said region.

9. An ergonomic keyboard input device for the transmission of information by a human operator to an electronic system coupled with said device, comprising: